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STATISTICS COLLOQUIUM

MONDAY, FEBRUARY 29, 2016
TALK: 4:15 PM — SCIENCE CENTER 300H
RECEPTION: 3:50 PM

**“On Estimation, Prediction, and Computation in
Problems with Combinatorial Structure”**

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ABSTRACT

We consider the problem of predicting a response for an individual given the person's covariate information and the position of the individual within a network. Such a fusion of the two sources of information naturally arises in a variety of applications, including recommendation systems, ad placement, and personalized medical care.

We first show that modeling this problem as a random graph with a planted community leads to computational difficulties for estimating the “signal” (work with T. Cai and T. Liang). We then present an approach that sidesteps the problem of estimation and directly solves the suitably formulated prediction problem (work with K. Sridharan).

The approach is online, computationally tractable in many situations of interest, and yields good prediction performance in practice. We extend the method to the problem of contextual multi-armed bandit, where for each individual in the network we sequentially observe response to the chosen treatment.